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CATHETER DEVICE FOR BIOPSIES

The present invention relates to a catheter device for biopsies wherein a forceps arrangement comprises forceps and an activating strand and a control member which, if endoscopes are involved, comprises a viewing member, a stranded conductor for illumination and viewing, and an endoscope head, wherein the endoscope and the forceps are arranged to be used on the actual site in a catheter means, which includes the stranded conductor, and which forms a channel for the forceps in which the forceps arrangement can be repeatedly inserted.

In previous catheter arrangements of this type, the endoscope is combined with a catheter housing into a structural unit, which forms the tool channel through which the automatic forceps arrangement is inserted to be used on the actual site without a guide catheter and without a guide wire.

The forceps arrangement is repeated pushed forward and retracted from the tool channel. In order to be able to slide and retract the instrument easily, the tool requires play within the tool channel; for example, the tool has a diameter of 1 mm and the channel a diameter of 1.4 mm. The construction of the endoscope is conventional, and the diameter is significantly greater than the forceps arrangement or the tool channel. The total diameter of the catheter device is relatively large and many small body cavities cannot be reached with the catheter device. The total diameter is essentially determined by the diameter of a conventional endoscope and the diameter of the forceps channel.

It is the object of the present invention to provide a catheter device of the aforementioned type whose total cross section is significantly decreased in order to be able to perform biopsies in previously inaccessible small body cavities. To this end, the inventive catheter device is characterized in that the endoscope is a mini-endoscope having a stranded conductor made of glass fibers with a lens at the end piece of the viewer, and in that the cross section of the mini-endoscope is smaller than the cross section of the forceps arrangement; in that the catheter means is a dual-channel catheter which, in addition to the forceps channel, is only provided with an endoscope channel in to which the mini-endoscope can be repeatedly inserted, and in that a

guide wire is associated with the dual channel catheter for sliding to, and to be used at the actual site.

The invention achieves a decrease in diameter not only owing to the use of the mini-endoscope, which is known per se, but also through the use of the guide wire. Since the relatively thin two-channel catheter is worn out or is bent after several applications, usually 5 to 10 applications, and since it is a part that wears out, the mini-endoscope is not permanently built in but is replaceable. Usually, the mini-endoscope is first inserted into the catheter and then it is pushed forward into the body cavities. The relatively expensive mini-endoscope can always be used again in a new catheter. The relatively thin, and correspondingly, easily bendable catheter is moved forward into the narrow body cavity. Thus, the invention requires a novel procedure in order to take the endoscope and the forceps arrangement repeatedly to the actual site.

In a mini-endoscope the diameter of the stranded conductor alone is maximally 0.4 mm, and the diameter of a stranded conductor provided with a jacket is maximally 0.5 mm. A mini-endoscope is marketed by the firm Olympus in Tokyo. The cross section of the forceps arrangement is determined by the cross section of the forceps, with the cross section of the forceps being significantly greater than he cross section of the activating

strand. The inventive catheter device is only provided with a mini-endoscope and the forceps arrangement, and no further channel or further lumen, since the cross section should be rather small. For example, a small catheter/forceps arrangement is employed whose maximal diameter is 1mm. The maximal diameter of the dual-lumen catheter is, for example, 2 mm. It is now possible in the field of gastroenterology to remove tissue from the pancreatic ducts, the bile ducts, and the gall bladder; in urology from the urinary tract and the renal calyx system; in gynecology from the ovaries; and in angiology in from most vessels.

A preferred embodiment of the invention is illustrated in the drawing in which:

Fig. 1 is a perspective view of a portion of a catheter device for biopsies;

Fig. 2 is a longitudinal view of a further portion of the catheter device in Fig. 1; and

Fig. 3 is a cross-sectional view along line III-III in Fig. 1.

The catheter device according to Figs. 1 - 3 comprises forceps arrangement 15 including forceps 1, which is provided with two forceps jaws 2, which are rotatable counterclockwise about a rotational axis 3. The rotational axis 3 is mounted on two projections 4, and an activating strand 6,

which extends in a catheter 5, projects over the lever arms. According to Fig. 2, the operating strand 6 terminates in an operating member 7, which comprises a handle 8 and a spring 9. If pressure is exerted on the handle 8, the activating strand 6 is moved forward, and the forceps jaws 2 open. The spring causes the activating strand 6 to be retracted and the forceps jaws 2 are closed. A stranded conductor 10 with an outer jacket 12 also extends into a mini-endoscope 11. The stranded conductor 10 exits from the catheter 5 at forceps 1 with the end of an eyepiece 13, with a lens 14 being attached to the end. According to Fig. 2, the stranded conductor 10 exits from the side of the catheter 5 and ends at the head of and endoscope 16.

The catheter 5 is provided with a forceps channel 17 and an endoscope channel 18 which is smaller relative to the former. A guide wire (which is not illustrated) and is also associated with the catheter, is first inserted into the body cavity that is being examined. The catheter 5, together with the forceps channel 17, is pushed forward on the guide wire, which is subsequently removed. Gas or fluid from the body cavity can be fed via the forceps channel to the body cavity or can be suctioned off. If the catheter 5 is inserted, the mini-endoscope 11 can also be removed in order to use the endoscope channel 18 for the insertion of a different device.

CLAIM

A catheter device for biopsies, wherein a forceps arrangement comprises forceps, an activating strand and a control member which, comprises a viewing member, a stranded conductor for illumination and viewing and an endoscope head, and wherein the endoscope and the forceps are arranged to be used on the actual site in a common catheter means, which includes the stranded conductor and which forms a channel for the forceps in which the forceps arrangement can be repeatedly inserted, **characterized in that** said endoscope is a mini-endoscope (11) having a stranded conductor (10) made of glass fibers with a lens (4) at the end piece of the viewer (13), and in that the cross section of the mini-endoscope (11) is smaller than the cross section of the forceps arrangement (15); in that the catheter means is a dual channel catheter (5) which, in addition to the forceps channel (17), is only provided with an endoscope channel (18) into which the mini-endoscope (11) can be repeatedly inserted, and in that a guide wire is associated with the dual channel catheter (5) for sliding to and to be used at the actual site.

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Fig.3

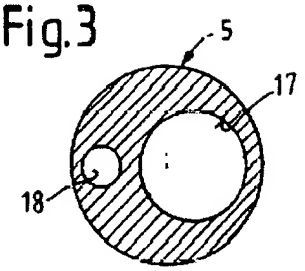


Fig.2

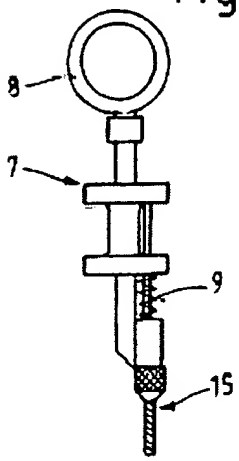
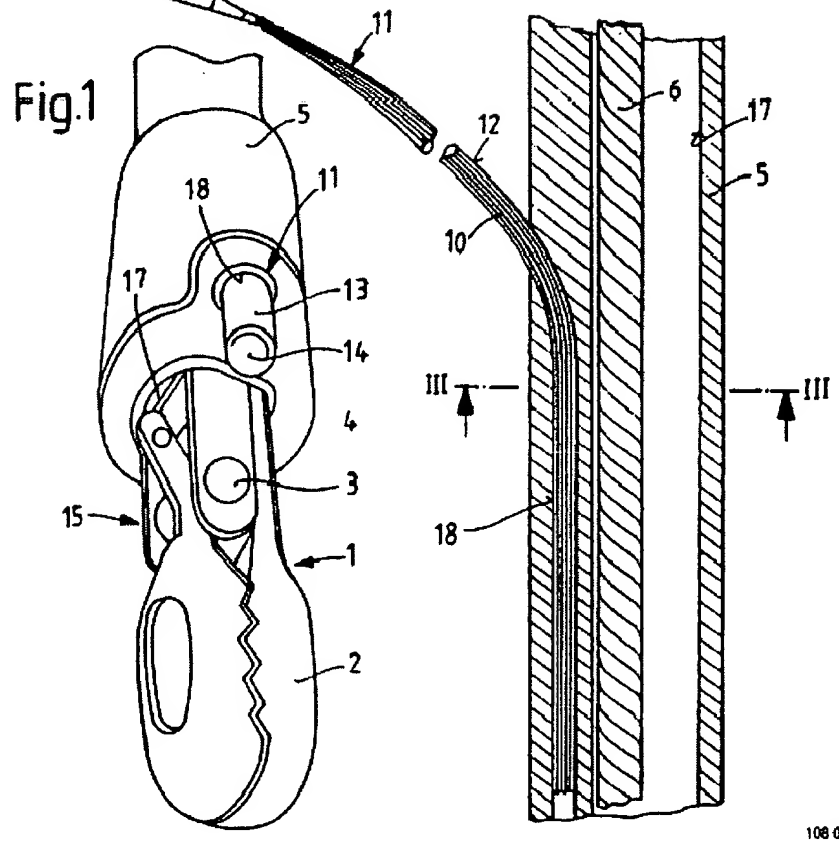


Fig.1



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